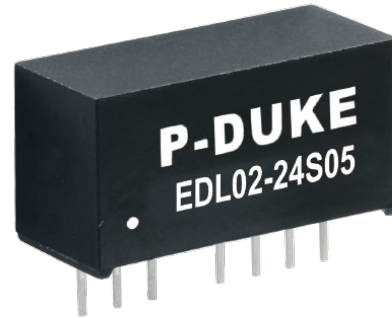


Features

- 2:1 Wide Input Range
- Operating Temperature Range: -40~105°C
- Approved to UKCA, CE, RoHS & REACH
- Safety Standards to IEC/UL/EN62368-1
- Efficiency up to 86%
- EMC Class A & B



Ideal Power's 43EDL02-xyz 2W Series Pin Connection DC/DC Converters are certified to UKCA, CE, RoHS, REACH & IEC/UL/EN 62368-1 Standards and comply with Efficiency Regulations. These are primarily used in ITE, Video & Audio Industries and customised solutions are available upon request.

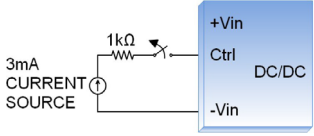
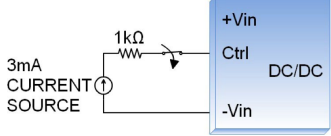
Part Number Structure

43EDL02 -	48	S	05
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)
	05: 4.5~13.2	S: Single	3P3: 3.3
	12: 9~18		05: 5
	24: 18~36		09: 9
	48: 36~75		12: 12
			15: 15
			24: 24
		D: Dual	05: ±5
			12: ±12
			15: ±15

Models

Model Number	Input Range	Output Voltage	Output Current @Full Load mA	Input Current @No Load mA	Efficiency %	Maximum Capacitor Load µF
43EDL02-05S3P3	4.5 ~ 13.2	3.3	500	35	78	3300
43EDL02-05S05	4.5 ~ 13.2	5	400	35	81	1680
43EDL02-05S09	4.5 ~ 13.2	9	222	45	84	1000
43EDL02-05S12	4.5 ~ 13.2	12	167	45	84	820
43EDL02-05S15	4.5 ~ 13.2	15	134	45	84	680
43EDL02-05S24	4.5 ~ 13.2	24	83	45	85	220
43EDL02-05D05	4.5 ~ 13.2	±5	±200	45	81	±1000
43EDL02-05D12	4.5 ~ 13.2	±12	±83	45	85	±470
43EDL02-05D15	4.5 ~ 13.2	±15	±67	55	84	±330
43EDL02-12S3P3	9 ~ 18	3.3	500	20	78	3300
43EDL02-12S05	9 ~ 18	5	400	20	82	1680
43EDL02-12S09	9 ~ 18	9	222	25	84	1000
43EDL02-12S12	9 ~ 18	12	167	25	85	820
43EDL02-12S15	9 ~ 18	15	134	25	85	680
43EDL02-12S24	9 ~ 18	24	83	25	85	220
43EDL02-12D05	9 ~ 18	±5	±200	25	82	±1000
43EDL02-12D12	9 ~ 18	±12	±83	25	85	±470
43EDL02-12D15	9 ~ 18	±15	±67	25	84	±330
43EDL02-24S3P3	18 ~ 36	3.3	500	10	78	3300
43EDL02-24S05	18 ~ 36	5	400	10	83	1680
43EDL02-24S09	18 ~ 36	9	222	10	85	1000
43EDL02-24S12	18 ~ 36	12	167	10	86	820
43EDL02-24S15	18 ~ 36	15	134	10	85	680
43EDL02-24S24	18 ~ 36	24	83	10	85	220
43EDL02-24D05	18 ~ 36	±5	±200	10	83	±1000
43EDL02-24D12	18 ~ 36	±12	±83	10	85	±470
43EDL02-24D15	18 ~ 36	±15	±67	15	86	±330
43EDL02-48S3P3	36 ~ 75	3.3	500	8	76	3300
43EDL02-48S05	36 ~ 75	5	400	8	80	1680
43EDL02-48S09	36 ~ 75	9	222	8	82	1000
43EDL02-48S12	36 ~ 75	12	167	8	84	820
43EDL02-48S15	36 ~ 75	15	134	8	85	680
43EDL02-48S24	36 ~ 75	24	83	8	85	220
43EDL02-48D05	36 ~ 75	±5	±200	8	80	±1000
43EDL02-48D12	36 ~ 75	±12	±83	8	85	±470
43EDL02-48D15	36 ~ 75	±15	±67	8	83	±330

Input Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Operating input voltage range	5Vin(nom)		4.5	5	13.2	VDC
	12Vin(nom)		9	12	18	
	24Vin(nom)		18	24	36	
	48Vin(nom)		36	48	75	
Start-up voltage	5Vin(nom)		--	--	4.5	VDC
	12Vin(nom)		--	--	9	
	24Vin(nom)		--	--	18	
	48Vin(nom)		--	--	36	
Shutdown voltage	5Vin(nom)		2	3	4	VDC
	12Vin(nom)		6	7	8	
	24Vin(nom)		13	15	17	
	48Vin(nom)		29	32	35	
Start-up time	Constant resistive load	Power up	--	10	20	ms
		Remote ON/OFF	--	10	20	
Input surge voltage	1 second, max.	5Vin(nom)	--	--	15	VDC
		12Vin(nom)	--	--	25	
		24Vin(nom)	--	--	50	
		48Vin(nom)	--	--	100	
Input filter			Capacitor type			
Remote ON/OFF	Ctrl pin applied current via 1kΩ	DC-DC ON	2	Open or high impedance		mA
		DC-DC OFF		3	4	
		Remote off input current		2.5		
<p>Application circuit</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>DC-DC ON</p>  </div> <div style="text-align: center;"> <p>DC-DC OFF</p>  </div> </div>						

Output Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Voltage accuracy			-1.0	--	+1.0	%
Line regulation	Low Line to High Line at Full Load		-0.2	--	+0.2	%
Load regulation	No Load to Full Load	Single	-1.0	--	+1.0	%
		Dual	-1.0	--	+1.0	
	10% Load to 90% Load	Single	-0.5	--	+0.5	
		Dual	-0.8	--	+0.8	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0	--	+5.0	
Ripple and noise	Measured by 20MHz bandwidth		--	75	--	mVp-p
Temperature coefficient			-0.02	--	+0.02	%/°C
Transient response recovery time	25% load step change		--	500	--	μs
Over current protection			140	180	240	%
Short circuit protection	Continuous, automatics recovery					

General Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Isolation voltage	1 minute Input to Output	1600	--	--	VDC
Isolation resistance	500VDC	1	--	--	GΩ
Isolation capacitance		--	--	50	pF
Switching frequency	Full load to minimum load	100	--	--	kHz
Safety approvals		IEC/ EN/ UL 62368-1			
Case material		Non-conductive black plastic			
Potting material		Silicone (UL94 V-0)			
Weight		4.5g (0.16oz)			
MTBF	MIL-HDBK-217F	6.621 x10 ⁶ hrs			

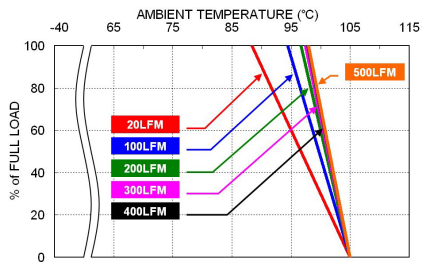
Environmental Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Operating base-plate temperature	With derating	-40	--	+105	°C
Maximum case temperature		--	--	105	°C
Storage temperature range		-55	--	+125	°C
Thermal shock		MIL-STD-810F			
Vibration		MIL-STD-810F			
Relative humidity		5% to 95% RH			

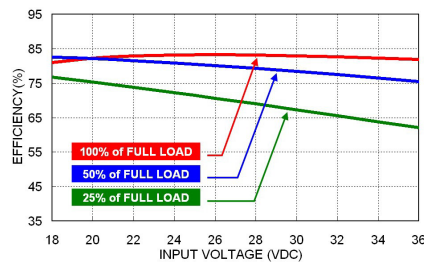
EMC Specifications

Parameter	Conditions	Level
EMI	EN55032 With external components	Class a, Class B
EMS	EN55024	
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ± 2kV With an external input filter capacitor (Nippon chemi-con KY series, 220µF/100V)	Perf. Criteria A
Surge	EN61000-4-5 ± 1kV With an external input filter capacitor (Nippon chemi-con KY series, 220µF/100V)	Perf. Criteria A
Conducted immunity	EN61000-4-6 10 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 100A/m continuous; 1000A/m 1 second	Perf. Criteria A

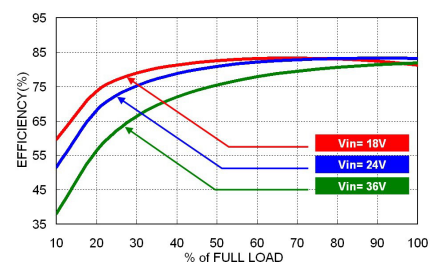
CAUTION: This power module is not internally fused. An input line fuse must always be used.

Characteristic Curve


43EDL02-24S05 Derating Curve



43EDL02-24S05 Efficiency vs. Input Voltage



43EDL02-24S05 Efficiency vs. Output Load

Fuse Consideration

This power module is not internally fused. An input line fuse must always be used.

This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture.

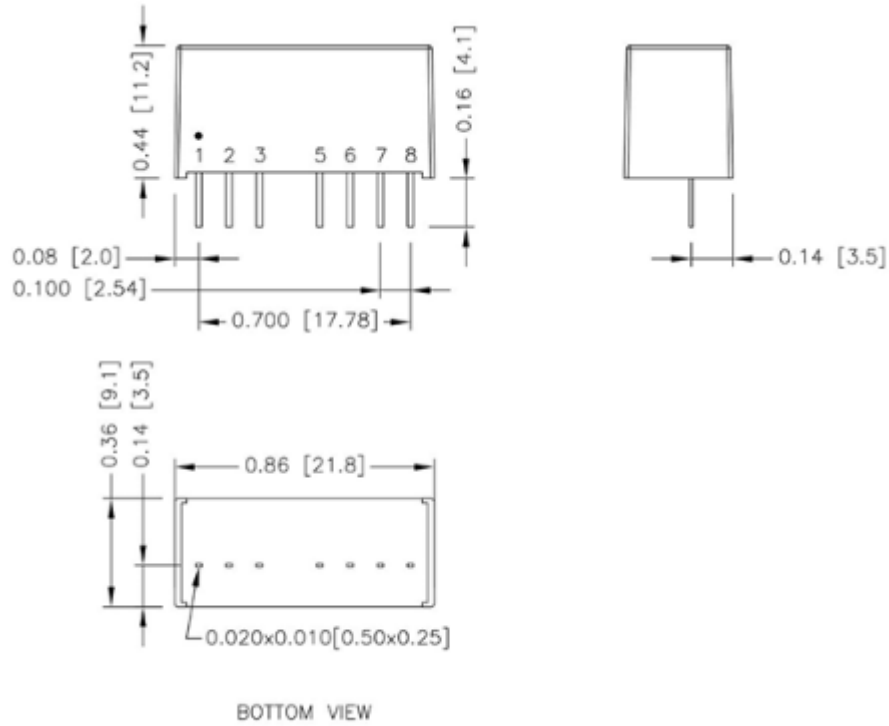
To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse.

The input line fuse suggest as below :

Model	Fuse Rating (A)	Fuse Type
43EDL02-05S□□, 43EDL02-05D□□	1	Slow-Blow
43EDL02-12S□□, 43EDL02-12D□□	0.5	Slow-Blow
43EDL02-24S□□, 43EDL02-24D□□	0.315	Slow-Blow
43EDL02-48S□□, 43EDL02-48D□□	0.16	Slow-Blow

The table based on the information provided in this data sheet on inrush energy and maximum DC input current at low Vin.

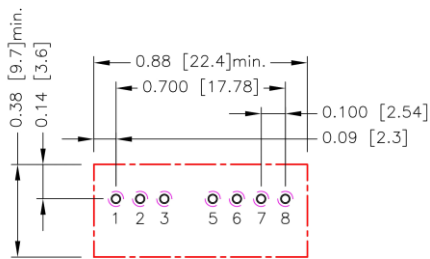
Mechanical Drawing



1. All dimensions in inch [mm]
2. Tolerance: x.xx±0.02 [x.x±0.5]
x.xxx±0.01 [x.xx±0.25]
3. Pin dimension tolerance ±0.004[0.10]

Pin Connection

Pin	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

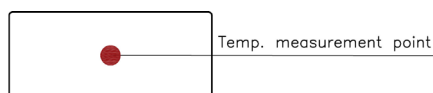
Recommended Pad Layout


All dimensions in inch(mm)
 Pad size(lead free recommended)
 Through hole 1.2.3.5.6.7.8: $\varnothing 0.031[0.80]$
 Top view pad 1.2.3.5.6.7.8: $\varnothing 0.039[1.00]$
 Bottom view pad 1.2.3.5.6.7.8: $\varnothing 0.063[1.60]$

Thermal Considerations

The power module operates in a variety of thermal environments. However, sufficient cooling should be provided to help ensure reliable operation of the unit. Heat is removed by conduction, convection, and radiation to the surrounding Environment. Proper cooling can be verified by measuring the point as the figure below. The temperature at this location should not exceed "Maximum case temperature". When operating, adequate cooling must be provided to maintain the test point temperature at or below "Maximum case temperature". You can limit this Temperature to a lower value for extremely high reliability.

- Thermal test condition with vertical direction by natural convection (20LFM).



Top View